CLAIMS:

[C1] In a blended polyethylene composition having a principal component comprising a high molecular weight (HMW) high-density polyethylene (HDPE) copolymer, the improvement comprising, blending at least one low molecular weight (LMW) HDPE homopolymer and/or at least one LMW HDPE copolymer with the HMW HDPE such that the proportion of the LMW HDPE homopolymer and LMW HDPE copolymer is in a ratio with respect to each other and the HMW HDPE copolymer to produce a blended polyethylene composition having a melt index (MI) and density such that the environmental stress crack resistance (ESCR) of the blended composition is greater than 70 hours.

[C2] The blend of claim 1 formed into a shape having a density in the range of about 0.945 to about 0.955 grams per cubic centimeter, an MI of less than about 0.4, a flexural modulus of about at least 110,000 pounds per square inch, a tensile strength of about 3,000 pounds per square inch, and a notched constant tensile load (NCTL) of greater than 100 hours.

[C3] A method of preparing a blended polyethylene composition having a principal component comprising a high molecular weight (HMW) high-density polyethylene (HDPE) copolymer comprising the steps of:
predetermining the density and MI for the blended polyethylene composition;
selecting a HMW HDPE copolymer as a principal component for the blended composition;
selecting at least one of a LMW HDPE homopolymer if the desired density is higher than that of the HMW HDPE determining the ratio of LMW HDPE homopolymer to HMW copolymer by utilizing the relationship wherein the density of the mixture equals the sum of a product of weight fraction density of the components. determining the MI of the mixture of LMW HDPE homopolymer and the HMW copolymer by utilizing the relationship in which

the logarithm of the MI of the mixture equals the sum of the logarithms of the product of the weight fraction and the MI of each component;

determining the ratio of the amount of LWM HDPE to be added to the amount of HWM copolymer and LMW homopolymer required to attain the desired MI for the polyethylene composition by utilizing the relationship wherein the logarithm of the MI of the mixture equals the sum of the logarithms of the product of the weight fraction and the MI of each component;

and,

blending the selected HMW HDPE, the HMW HDPE copolymer and LMW HDPE homopolymer in the proportions determined;

whereby the blended composition when formed into a shape has a density in the range of about 0.945 to about 0.955 grams per cubic centimeter, an MI of less than about 0.4, a flexural modulus of about at least 110,000 pounds per square inch, a tensile strength of about 3,000 pounds per square inch, and a notched constant tensile load (NCTL) of greater than 75 hours.

[C4] A corrugated polyethylene pipe formed from the blend of claim 1 having an ESCR exceeding 75 hours.